

H1128
0054593

Eberline Services
W.O. No. R0-11-074-7554

Bechtel Hanford Inc.
SDG H1128

Case Narrative

Page 1 of 1

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1128 was composed of two other solid samples designated under SAF No. B99-028 with a Project Designation of: 100-HR-3 Pump & Treat-Resin Sampling.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 22 and 30, 2000.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses

2.2 Total Strontium Analyses

The RPD between sample B10NV6 and its sample duplicate was 197%, greater than the 3σ limit of 90%. The difference between sample B10NV6 and its sample duplicate did not exceed 2-times the RDL (1.0 pCi/g) for Sr. No other problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Tritium Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Melissa C. Mannion
Program Manager

12/30/00
Date



TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

SDG 7554
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract JRC-SBB-207925
Case no SDG H1128

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10NV6	100 HR-3	SOLID		R011074-01	B99-028	B99-028-56	11/06/00 08:50
B10NV7	100 HR-3	SOLID		R011074-02	B99-028	B99-028-56	11/06/00 09:15
Method Blank		SOLID		R011074-04	B99-028		
Lab Control Sample		SOLID		R011074-03	B99-028		
Duplicate (R011074-01)	100 HR-3	SOLID		R011074-05	B99-028		11/06/00 08:50

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 12/30/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

QC SUMMARY

SDG 7554
 Contact Melissa C. Mannion

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1128

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7554	B99-028-56	B10NV6	SOLID	100.0			11/08/00 2	R011074-01	7554-001
		B10NV7	SOLID	100.0			11/08/00 2	R011074-02	7554-002
		Method Blank	SOLID					R011074-04	7554-004
		Lab Control Sample	SOLID					R011074-03	7554-003
		Duplicate (R011074-01)	SOLID				11/08/00 2	R011074-05	7554-005

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

SDG 7554
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1128

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED			QUALI-			
			BATCH	2σ %	CLIENT	MORE	RE		BLANK	LCS	DUP/ORIG
Alpha Spectroscopy											
U	SOLID	Uranium, Isotopic in Soil	6962-077	5.0	2			1	1	1/1	
Beta Counting											
SR	SOLID	Total Strontium in Soil	6962-077	10.0	2			1	1	1/1	
TC	SOLID	Technetium 99 in Soil	6962-077	10.0	2			1	1	1/1	
Liquid Scintillation Counting											
H	SOLID	Tritium in Soil	6962-077	10.0	2			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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Lab id TMANC
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

SDG 7554
 Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1128

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD	
CUSTODY	SAF No	RECEIVED			FIX					
B10NV6		R011074-01	7554-001	H		12/07/00	12/21/00	MCM	Tritium in Soil	
100 HR-3	SOLID	11/06/00	7554-001	SR		11/30/00	12/21/00	MCM	Total Strontium in Soil	
B99-028-56	B99-028	11/08/00	7554-001	TC		12/21/00	12/30/00	MCM	Technetium 99 in Soil	
			7554-001	U		12/01/00	12/22/00	MCM	Uranium, Isotopic in Soil	
B10NV7		R011074-02	7554-002	H		12/07/00	12/21/00	MCM	Tritium in Soil	
100 HR-3	SOLID	11/06/00	7554-002	SR		11/30/00	12/21/00	MCM	Total Strontium in Soil	
B99-028-56	B99-028	11/08/00	7554-002	TC		12/19/00	12/30/00	MCM	Technetium 99 in Soil	
			7554-002	U		12/01/00	12/22/00	MCM	Uranium, Isotopic in Soil	
Method Blank		R011074-04	7554-004	H		12/07/00	12/21/00	MCM	Tritium in Soil	
	SOLID		7554-004	SR		11/30/00	12/21/00	MCM	Total Strontium in Soil	
	B99-028		7554-004	TC		12/19/00	12/30/00	MCM	Technetium 99 in Soil	
			7554-004	U		12/01/00	12/22/00	MCM	Uranium, Isotopic in Soil	
Lab Control Sample		R011074-03	7554-003	H		12/07/00	12/21/00	MCM	Tritium in Soil	
	SOLID		7554-003	SR		11/30/00	12/21/00	MCM	Total Strontium in Soil	
	B99-028		7554-003	TC		12/28/00	12/30/00	MCM	Technetium 99 in Soil	
			7554-003	U		12/05/00	12/22/00	MCM	Uranium, Isotopic in Soil	
Duplicate (R011074-01)		R011074-05	7554-005	H		12/07/00	12/21/00	MCM	Tritium in Soil	
100 HR-3	SOLID	11/06/00	7554-005	SR		11/30/00	12/21/00	MCM	Total Strontium in Soil	
	B99-028	11/08/00	7554-005	TC		12/21/00	12/30/00	MCM	Technetium 99 in Soil	
			7554-005	U		12/01/00	12/22/00	MCM	Uranium, Isotopic in Soil	

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-028	Tritium in Soil	TRITIUM_COX_LSC	2			1	1	1	5
SR	B99-028	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TC	B99-028	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1	5
U	B99-028	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	2			1	1	1	5
TOTALS				8			4	4	4	20

WORK SUMMARY

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Lab id TMANC
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T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H1128

R011074-04

Method Blank

M E T H O D B L A N K

SDG 7554
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1128
Contract TRC-SBB-207925

Lab sample id R011074-04
Dept sample id 7554-004

Client sample id Method Blank
Material/Matrix SOLID
SAF No B99-028

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.447	3.6	6.1	400	U	H
Total Strontium	SR-RAD	-0.058	0.12	0.27	1.0	U	SR
Technetium 99	14133-76-7	<u>-0.175</u>	0.17	0.67	15	U	TC
Uranium 233	U-233/234	0.042	0.055	0.11	1.0	U	U
Uranium 235	15117-96-1	0.017	0.034	0.13	1.0	U	U
Uranium 238	U-238	0.028	0.028	0.11	1.0	U	U

100-HR-3 Pump & Treat - Resin Smping.

QC-BLANK 36746

METHOD BLANKS

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

R011074-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7554</u>	Client/Case no <u>Hanford</u> SDG <u>H1128</u>
Contact <u>Melissa C. Mannion</u>	Case no <u>JRC-SBB-207925</u>
Lab sample id <u>R011074-03</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7554-003</u>	Material/Matrix <u>SOLID</u>
	SAF No <u>899-028</u>

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	1430	19	6.1	400		H	1490	60	96	84-116	80-120
Total Strontium	22.4	0.97	0.34	1.0		SR	22.0	0.88	102	82-118	80-120
Technetium 99	112	1.8	0.41	15		TC	109	4.4	103	83-117	80-120
Uranium 233	9.26	0.59	0.27	1.0		U	9.29	0.37	100	86-114	80-120
Uranium 235	7.42	0.52	0.042	1.0		U	7.55	0.30	98	86-114	80-120
Uranium 238	10.1	0.63	0.26	1.0		U	10.1	0.40	100	87-113	80-120

100-HR-3 Pump & Treat - Resin Smpg.

QC-LCS 36745

LAB CONTROL SAMPLES

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>12/30/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

R011074-05

B10NV6

DUPLICATE

SDG <u>7554</u>		Client/Case no <u>Hanford</u>		SDG <u>H1128</u>
Contact <u>Melissa C. Mannion</u>		Case no <u>TRC-SBB-207925</u>		
DUPLICATE		ORIGINAL		
Lab sample id <u>R011074-05</u>	Lab sample id <u>R011074-01</u>	Client sample id <u>B10NV6</u>		
Dept sample id <u>7554-005</u>	Dept sample id <u>7554-001</u>	Location/Matrix <u>100 HR-3</u> SOLID		
	Received <u>11/08/00</u>	Collected <u>11/06/00 08:50</u>		
	% solids <u>100.0</u>	Custody/SAF No <u>B99-028-56</u> <u>B99-028</u>		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	7.90	3.7	5.8	400	J	H	11.1	3.8	5.8	J	34	86	
Total Strontium	0.707	0.17	0.22	1.0	J	SR	0.005	0.11	0.24	U	197	90	
Technetium 99	18.9	1.3	0.96	15		TC	18.2	1.1	1.1		4	25	
Uranium 233	0.114	0.069	0.087	1.0	J	U	0.138	0.050	0.038	J	19	102	
Uranium 235	0.014	0.028	0.11	1.0	U	U	0	0.012	0.046	U	-		
Uranium 238	0.080	0.069	0.087	1.0	U	U	0.133	0.050	0.038	J	50	120	

100-HR-3 Pump & Treat - Resin Smpg.

QC-DUP#1 36747

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1128

R011074-01

B10NV6

D A T A S H E E T

SDG <u>7554</u>	Client/Case no <u>Hanford</u>	SDG <u>H1128</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011074-01</u>	Client sample id <u>B10NV6</u>	
Dept sample id <u>7554-001</u>	Location/Matrix <u>100 HR-3</u>	<u>SOLID</u>
Received <u>11/08/00</u>	Collected <u>11/06/00 08:50</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-56</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	11.1	3.8	5.8	400	J	H
Total Strontium	SR-RAD	0.005	0.11	0.24	1.0	U	SR
Technetium 99	14133-76-7	18.2	1.1	1.1	15		TC
Uranium 233	U-233/234	0.138	0.050	0.038	1.0	J	U
Uranium 235	15117-96-1	0	0.012	0.046	1.0	U	U
Uranium 238	U-238	0.133	0.050	0.038	1.0	J	U

100-HR-3 Pump & Treat - Resin Smply.

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H1128

R011074-02

B10NV7

D A T A S H E E T

SDG <u>7554</u>	Client/Case no <u>Hanford</u>	SDG <u>H1128</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011074-02</u>	Client sample id <u>B10NV7</u>	
Dept sample id <u>7554-002</u>	Location/Matrix <u>100 HR-3</u>	<u>SOLID</u>
Received <u>11/08/00</u>	Collected <u>11/06/00 09:15</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-56</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	18.8	4.1	5.9	400	J	H
Total Strontium	SR-RAD	-0.002	0.12	0.25	1.0	U	SR
Technetium 99	14133-76-7	36.5	1.5	1.0	15		TC
Uranium 233	U-233/234	0.449	0.17	0.10	1.0	J	U
Uranium 235	15117-96-1	0.049	0.066	0.13	1.0	U	U
Uranium 238	U-238	0.367	0.14	0.10	1.0	J	U

100-HR-3 Pump & Treat - Resin Smply.

Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
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Report date	<u>12/30/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

Test U Matrix SOLID
SDG 7554
Contact Melissa C. Mannion

METHOD SUMMARY
URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1128

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%)			
								1÷3	2σ	2÷3	2σ
Preparation batch 6962-077											
B10NV6	R011074-01			7554-001	0.138 J	U	0.133 J	104	54	0	9
B10NV7	R011074-02			7554-002	0.449 J	U	0.367 J	122	66	13	19
BLK (QC ID=36746)	R011074-04			7554-004	U	U	U				
LCS (QC ID=36745)	R011074-03			7554-003	ok	ok	ok				
Duplicate (R011074-01)	R011074-05			7554-005	ok J	- U	ok U				
Nominal values and limits from method											
				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-HR-3 Pump & Treat - Resin Smpg.								Averages 113		7	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-077 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 077																
B10NV6	R011074-01			0.046	1.07			89		259		25	11/30/00	12/01	SS-041	
B10NV7	R011074-02			0.13	1.00			84		109		25	11/30/00	12/01	SS-027	
BLK (QC ID=36746)	R011074-04			0.13	1.00			76		109			11/30/00	12/01	SS-031	
LCS (QC ID=36745)	R011074-03			0.27	1.00			83		275			11/30/00	12/05	SS-029	
Duplicate (R011074-01) (QC ID=36747)	R011074-05			0.11	1.05			87		109		25	11/30/00	12/01	SS-032	
Nominal values and limits from method																
				1.0	1.00			20-105		100	100	180				

PROCEDURES REFERENCE UIISO_PLATE_AEA
CP-911 Uranium in Water and Dissolved Sample by
Extraction Chromatography, rev 2
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 0.14 ± 0.16
FOR 5 SAMPLES YIELD 84 ± 10

METHOD SUMMARIES

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

Test SR Matrix SOLID
SDG 7554
Contact Melissa C. Mannion

METHOD SUMMARY
TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1128

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 6962-077					
B10NV6	R011074-01			7554-001	U
B10NV7	R011074-02			7554-002	U
BLK (QC ID=36746)	R011074-04			7554-004	U
LCS (QC ID=36745)	R011074-03			7554-003	ok
Duplicate (R011074-01)	R011074-05			7554-005	<u>OUT</u> J

Nominal values and limits from method RDLs (pCi/g) 1.0
100-HR-3 Pump & Treat - Resin Smplg.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-077 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 077																
B10NV6	R011074-01			0.24	1.12			91		100			24	11/30/00	11/30	GRB-230
B10NV7	R011074-02			0.25	1.09			94		100			24	11/30/00	11/30	GRB-231
BLK (QC ID=36746)	R011074-04			0.27	1.00			92		100				11/30/00	11/30	GRB-207
LCS (QC ID=36745)	R011074-03			0.34	1.00			94		100				11/30/00	11/30	GRB-232
Duplicate (R011074-01) (QC ID=36747)	R011074-05			0.22	1.02			94		118			24	11/30/00	11/30	GRB-222

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-502 Strontium in Solids, rev 2
CP-519 Strontium Planchet Demounting and Preparation for
90Y Decontamination, rev 2

AVERAGES ± 2 SD MDA 0.26 ± 0.092
FOR 5 SAMPLES YIELD 93 ± 3

METHOD SUMMARIES

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Lab id TMANC
Protocol Hanford
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Report date 12/30/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1128

Test TC Matrix SOLID
SDG 7554
Contact Melissa C. Mannion

METHOD SUMMARY
TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1128

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Technetium 99 PLANCHET
Preparation batch 6962-077				
B10NV6	R011074-01			7554-001 18.2
B10NV7	R011074-02			7554-002 36.5
BLK (QC ID=36746)	R011074-04			7554-004 U
LCS (QC ID=36745)	R011074-03			7554-003 ok
Duplicate (R011074-01)	R011074-05			7554-005 ok

Nominal values and limits from method RDLs (pCi/g) 15
100-HR-3 Pump & Treat - Resin Smpg.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-077 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 077																
B10NV6	R011074-01			1.1	1.02			47		50			45	12/01/00	12/21	GRB-218
B10NV7	R011074-02			1.0	1.06			48		50			43	12/01/00	12/19	GRB-230
BLK (QC ID=36746)	R011074-04			0.67	1.00			76		50				12/01/00	12/19	GRB-232
LCS (QC ID=36745)	R011074-03			0.41	1.00			90		93				12/01/00	12/28	GRB-202
Duplicate (R011074-01) (QC ID=36747)	R011074-05			0.96	1.02			53		50			45	12/01/00	12/21	GRB-217

Nominal values and limits from method 15 1.00 20-105 50 180

PROCEDURES REFERENCE TC99_TR_SEP_LSC
CP-060 Soil Preparation, rev 2
CP-021 Preparation of Tc-99m Tracer, rev 0
CP-002 Q.C. Preparation, rev 2
CP-003 Tracing, rev 2
CP-542 Technetium-99 Purification (Soil) by Extraction Chromatography, rev 0
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 0.83 ± 0.57
FOR 5 SAMPLES YIELD 63 ± 38

METHOD SUMMARIES

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Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/30/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1128

Test H Matrix SOLID

SDG 7554

Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford

Contract TRC-SBB-207925

Contract SDG H1128

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Tritium
Preparation batch 6962-077				
B10NV6	R011074-01		7554-001	11.1 J
B10NV7	R011074-02		7554-002	18.8 J
BLK (QC ID=36746)	R011074-04		7554-004	U
LCS (QC ID=36745)	R011074-03		7554-003	ok
Duplicate (R011074-01)	R011074-05		7554-005	ok J

Nominal values and limits from method RDLs (pCi/g) 400
 100-HR-3 Pump & Treat - Resin Smplg.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ FAC	PREP TION	DILU- %	YIELD %	EFF min	COUNT keV	FWHM keV	DRIFT HELD	DAYS PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6962-077 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 077															
B10NV6	R011074-01		5.8	0.215			100	100				31	12/06/00	12/07	LSC-006
B10NV7	R011074-02		5.9	0.209			100	100				31	12/06/00	12/07	LSC-006
BLK (QC ID=36746)	R011074-04		6.1	0.200			100	100					12/06/00	12/07	LSC-006
LCS (QC ID=36745)	R011074-03		6.1	0.200			100	100					12/06/00	12/07	LSC-006
Duplicate (R011074-01) (QC ID=36747)	R011074-05		5.8	0.212			100	100				31	12/06/00	12/07	LSC-006

Nominal values and limits from method 400 0.200 25 180

PROCEDURES REFERENCE TRITIUM_COX_LSC
 CP-060 Soil Preparation, rev 2
 CP-251 Tritium/Carbon-14 Oxidation, rev 2

AVERAGES ± 2 SD MDA 5.9 ± 0.30
 FOR 5 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 15

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 12/30/00

Bechtel Hanford Inc.						CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST							B99-028-56	Page 1 of 1				
Collector Fahlberg						Company Contact T Pickett			Telephone No. 373-4630			Project Coordinator TRENT, SJ		Price Code 9N Data Turnaround 45 Days				
Project Designation 100-HR-3 Pump & Treat - Resin Sampling						Sampling Location 100 HR-3 H1128 (7554)			SAF No. B99-028		Air Quality <input type="checkbox"/>							
Ice Chest No. ERC-99-044 (1st)						Field Logbook No. EL 1517-1			COA R10HR3C570		Method of Shipment Fed Ex							
Shipped To TMA/RECA RT 11/6/00						Offsite Property No. ACPI 0010			Bill of Lading/Air Bill No. 42351453-0350									
POSSIBLE SAMPLE HAZARDS/REMARKS HISTORICAL DATA INDICATES THAT SAMPLES ARE LESS THAN 2000 pCi/g Special Handling and/or Storage						Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None				
						Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG				
						No. of Container(s)	1	1	1	1	1	1	1					
						Volume	60mL	60mL	60mL	120mL	250mL	250ml	200mL	500mL				
SAMPLE ANALYSIS						Isotopic Uranium	Strontium-89,90 -- Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	See item (2) in Special Instructions.						
										(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add On) (Trichloromethane, Fluoromethane) (2) Metals by ICP (TCLD) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver), Metals by TCL (FCM) Add-on - 1311/6010 (Antimony, Bismuth, Nickel)								
Sample No.	Matrix *	Sample Date	Sample Time	X	X	X	X											
B10NV6 ✓	OTHER SOLID ✓	11/6/00 ✓	0850 ✓	X	X	X	X											
B10NV7 /	OTHER SOLID	11/6/00	0915 ✓	X ✓	X ✓	X ✓	X ✓											
CHAIN OF POSSESSION														SPECIAL INSTRUCTIONS				Matrix *
Relinquished By P. Fahlberg / R. Fahlberg				Date/Time 11/6/00	Received By Ref # 2-B				Date/Time 11/6/00	** Historical data indicates that samples are less than 2000 pCi total activity. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add On) (Trichloromethane, Fluoromethane) (2) Metals by ICP (TCLD) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver), Metals by TCL (FCM) Add-on - 1311/6010 (Antimony, Bismuth, Nickel) Samples stored in Ref.# 2B at the 3728 Shipping Facility on 11/6/00 Collector not available to relinquish samples on 11/7/00 for shipment. RT 11/6/00				S=Soil SE=Sealant SO=Solid S=Sediment W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquid T=Tissue WL=Wipe L=Liquid V=Vegetation X=Other				
Relinquished By R. J. Thoren				Date/Time 11/7/00	Received By R. J. Thoren				Date/Time 11/7/00									
Relinquished By R. J. Thoren				Date/Time 11/7/00	Received By TAD EY				Date/Time 11/7/00									
Relinquished By FED EXPERTS				Date/Time 11/08/00	Received By E. Legursky				Date/Time 10/08/00									
Relinquished By				Date/Time	Received By				Date/Time									
LABORATORY SECTION				Received By				Title	Date/Time									
FINAL SAMPLE DISPOSITION				Disposal Method				Disposed By	Date/Time									

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>BECHTEL HANFORD INC.</u>	Date/Time received <u>11-08/00 10:AM</u>		
CoC No. <u>B99-028-56</u>			
Container I.D. No. <u>ERC 99-044</u>	Requested TAT (Days) <u>45</u>	P.O. Received Yes [] No [<input checked="" type="checkbox"/>]	
INSPECTION			
1. Custody seals on shipping container intact?	Yes [<input checked="" type="checkbox"/>]	No []	N/A []
2. Custody seals on shipping container dated & signed?	Yes [<input checked="" type="checkbox"/>]	No []	N/A []
3. Custody seals on sample containers intact?	Yes [<input checked="" type="checkbox"/>]	No []	N/A []
4. Custody seals on sample containers dated & signed?	Yes [<input checked="" type="checkbox"/>]	No []	N/A []
5. Cooler Temperature: _____	Packing material is: Wet [] Dry [<input checked="" type="checkbox"/>]		
6. Number of samples in shipping container: <u>2 x 4 = (8 container)</u>			
7. Number of containers per sample: <u>(4 EACH)</u> (Or see CoC _____)			
8. Paperwork agrees with samples?	Yes [<input checked="" type="checkbox"/>]	No []	
9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels [<input checked="" type="checkbox"/>]			
10. Samples are: In good condition [<input checked="" type="checkbox"/>] Leaking [] Broken Container [] Missing []			
11. Describe any anomalies: _____ _____			
13. Was P.M. notified of any anomalies? Yes [] No [] Date _____			
14. Received by <u>E. Segura</u> Date: <u>11/08/00</u> Time: <u>10:AM</u>			

Customer Sample No.	cpm	mr/hr
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

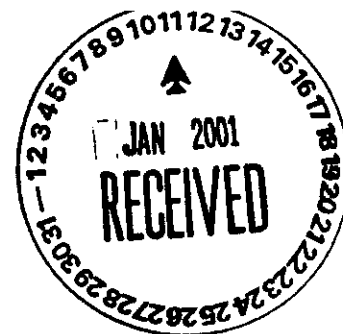
Customer Sample No.	Cpm	mr/hr
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Ion Chamber Ser. No. _____

Calibration date _____

Survey Meter Ser No. _____

Calibration date _____



Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1128

DATE RECEIVED: 11/08/00

RFW LOT # :0011L194

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B10NV6

% SOLIDS	001	SO	00L&S178	11/06/00	11/09/00	11/10/00
% SOLIDS	001 REP	SO	00L&S178	11/06/00	11/09/00	11/10/00
NITRATE BY IC	001	SO	00LXC076	11/06/00	11/29/00	11/29/00
NITRATE BY IC	001 REP	SO	00LXC076	11/06/00	11/29/00	11/29/00
NITRATE BY IC	001 MS	SO	00LXC076	11/06/00	11/29/00	11/29/00
TCLP	001	SO	00LTO141	11/06/00	12/14/00	12/15/00

B10NV7

% SOLIDS	002	SO	00L&S178	11/06/00	11/09/00	11/10/00
NITRATE BY IC	002	SO	00LXC076	11/06/00	11/29/00	11/29/00
TCLP	002	SO	00LTO141	11/06/00	12/14/00	12/15/00

LAB QC:

NITRATE BY IC	MB1	S	00LXC076	N/A	11/29/00	11/29/00
NITRATE BY IC	MB1 BS	S	00LXC076	N/A	11/29/00	11/29/00

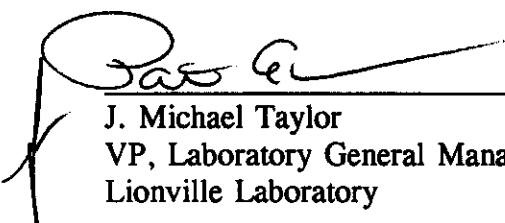
**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-028 H1128
RFW# : 0011L194

W.O. # : 10985-001-001-9999-00
Date Received: 11-08-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 solid samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperatures were recorded on the chain-of-custody.
5. The method blank for Nitrate was within method criteria.
6. The Laboratory Control Sample (LCS) for Nitrate was within the laboratory control limits.
7. The matrix spike recovery for Nitrate was within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-26-00
Date

njp&pef/i11-194

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	___ D2216-80		
% Moisture	___ D2216-80		___ ILMO4.0 (e)
% Solids	___ D2216-80		___ ILMO4.0 (e)
% Volatile Solids	___ D2216-80		
ASTM Extraction in Water	___ D3987-81/85		
BTU	___ D240-87		
CEC		___ 9081	___ c
Chromium VI		___ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		___ 1110(mod) ___ 9045C	
Cyanide, Total		___ 9010B	___ ILMO4.0 (e)
Cyanide, Reactive		___ Section 7.3/9014	
Halides, Extractable Organic		___ 9020B	___ EPA 600/4/84-008
Halides, Total		___ 9020B	___ EPA 600/4/84-008
EP Toxicity		___ 1310A	
Flash Point		___ 1010	
Ignitability		___ 1010	
Oil & Grease		___ 9071A	
Carbon, Total Organic		___ 9060	___ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	___ D240-87(mod)	___ 5050	
Petroleum Hydrocarbons, Total Recoverable		___ 9071	___ EPA 418.1
pH, Soil		___ 9045C	
Sulfide, Reactive		___ Section 7.3/9030B	
Sulfide		___ 9030B(mod)	
Specific Gravity	___ D1429-76C/	___ D5057-90	
Sulfur, Total		___ 9056	
Synthetic Preparation Leach		___ 1312	
Paint Filter		___ 9095A	
Other: <i>Nitrate</i>	Method: <i>EPA 300.0 (mod)</i>		
Other: _____	Method _____		

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/15/00

CLIENT: TNUHANFORD B99-028 H1128
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L194

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10NV6	% Solids	44.5	%	0.01	1.0
		Nitrate by IC	20	MG/KG	2.8	1.0
-002	B10NV7	% Solids	44.2	%	0.01	1.0
		Nitrate by IC	21	MG/KG	2.8	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/15/00

CLIENT: TNUHANFORD B99-028 H1128
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L194

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LXC076-MB1	Nitrate by IC	1.2	u MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/15/00

CLIENT: TNUHANFORD B99-028 H1128
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L194

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-001	B10NV6	Nitrate by IC	78	20	56	103.8	1.0
BLANK10	00LXC076-MB1	Nitrate by IC	25	1.2 u	25	98.5	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/15/00

CLIENT: TNUHANFORD B99-028 H1128
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L194

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B10NV6	% Solids	44.5	44.6	0.090	1.0
		Nitrate by IC	20	19	7.0	1.0

RECRA LabNet Use Only

0011194

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client TNU - Hanford B99-028

Est. Final Proj. Sampling Date _____

Project # 10985-001-001-9999-00

Project Contact/Phone # _____

RECRA Project Manager AS

QC Spec Del Std **TAT** 30 day

Date Rec'd 11-8-00 **Date Due** 12-8-00

Account # _____

Refrigerator # 1 5

#/Type Container

Liquid																			
Solid	1AG	1AG						1AG	1AG										

Volume

Liquid								500	1 each										
Solid	250	250						250	250										

Preservatives

	-	-						-	-										
--	---	---	--	--	--	--	--	---	---	--	--	--	--	--	--	--	--	--	--

ANALYSES REQUESTED

ORGANIC					INORG	
VOA	BNA	Pest/PCB	Herb		Metal	CN

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only											
			MS	MSD				OW24X	OW25X										
	001	Bionvle			SO	11/8/00	0850	✓	✓										
	002	1 7			1	1	0915	✓	✓										
	003	Bionvle top of cool			L	*	-												
	004	1 7 1 002			1	1	-												

Special Instructions: Saf B99-028

Run Matrix QC

DATE/REVISIONS:

* 1. See lab chron

met 1 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

3. _____

4. _____

5. _____

6. _____

Relinquished by	Received by	Date	Time
FedEx	T. Koppel	11/8/00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		
	REWRITE		

Discrepancies Between Samples Labels and COC Record? Y or N (N)

NOTES:

4235 79530360

RECRA LabNet Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # <u>See below</u> 2) Ambient or <u>Chilled</u> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Labels Indicate Property Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N	COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC Record Present Upon Sample Rec'd <input checked="" type="checkbox"/> or N Cooler Temp <input checked="" type="checkbox"/> C

WILLIT

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-028-56		Page 1 of 1			
Collector Fahlberg		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N		Data Turnaround 45 Days			
Project Designation 100-HR-3 Pump & Treat - Resin Sampling		Sampling Location 100 HR-3		SAF No. B99-028		Air Quality							
Ice Chest No. GWS 142 (10fi)		Field Logbook No. EL 1517-1		COA R10HR3C570		Method of Shipment Fed Ex							
Shipped To FMA/RECRA 11/6/00		Offsite Property No. A010004		Bill of Lading/Air Bill No. 43357953-0360									
POSSIBLE SAMPLE HAZARDS/REMARKS Historical DATA indicates That samples are <2000 pCi/g Special Handling and/or Storage				Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG	
				No. of Container(s)	1	1	1	1	1	1	1	1	
				Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS				Isotopic Uranium	Strontium-90/91	Technetium-99	Tritium - H3	Semi-VOA - 8260A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time										
B10NV6	OTHER SOLID	11/6/00	0850					X	X	X	X		
B10NV7	OTHER SOLID	11/6/00	0915					X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS								Matrix *	
Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00				** Historical data indicates that samples are less than 2000 pCi total activity. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel) Samples stored in Ref. # 2B at the 3728 Shipping Facility on 11/6/00 Collector not available to relinquish samples on 11/7/00 for shipment.. RF 11/7/00								S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WL=Wipe L=Liquid V=Vegetation X=Other	
LABORATORY SECTION				Date/Time									
FINAL SAMPLE DISPOSITION				Disposal Method								Disposed By	Date/Time

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1128



DATE RECEIVED: 11/08/00

RFW LOT # :0011L194

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10NV6						
TCLP	001	SO	00LTO141	11/06/00	12/14/00	12/15/00
B10NV7						
TCLP	002	SO	00LTO141	11/06/00	12/14/00	12/15/00
B10NV6						
SILVER, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
SILVER, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
SILVER, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
ARSENIC, TCLP LEACHA	003	W	99L1822	12/15/00	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
BARIUM, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
CADMIUM, TCLP LEACHA	003	W	99L1822	12/15/00	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
NICKEL, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
LEAD, TCLP LEACHATE	003	W	99L1822	12/15/00	12/15/00	12/18/00
LEAD, TCLP LEACHATE	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
LEAD, TCLP LEACHATE	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1128

DATE RECEIVED: 11/08/00

RFW LOT # :0011L194

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00

B10NV7

SILVER, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
ARSENIC, TCLP LEACHA	004	W	99L1822	12/15/00	12/15/00	12/18/00
BARIUM, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	004	W	99L1822	12/15/00	12/15/00	12/19/00
CADMIUM, TCLP LEACHA	004	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00
NICKEL, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
LEAD, TCLP LEACHATE	004	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
SILVER, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
SILVER, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
ARSENIC LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	MB1	W	99L1822	N/A	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	MB2	W	99L1822	N/A	12/15/00	12/18/00
BARIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1822	N/A	12/15/00	12/19/00
CADMIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	MB1	W	99L1822	N/A	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	MB2	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00
NICKEL LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1128

DATE RECEIVED: 11/08/00

RFW LOT # :0011L194

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
LEAD LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
LEAD, TCLP LEACHATE	MB1	W	99L1822	N/A	12/15/00	12/18/00
LEAD, TCLP LEACHATE	MB2	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00

**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD B99-028
RFW#: 0011L194
SDG/SAF#: H1128/B99-028

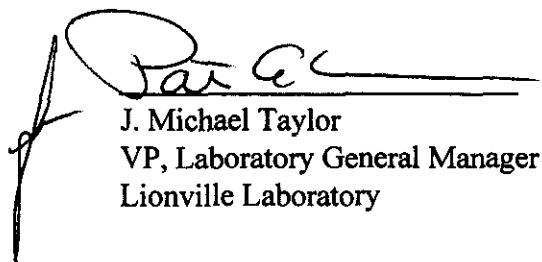
W.O.#: 10985-001-001-9999-00
Date Received: 11-08-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 TCLP leachate samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury). The CCVs for Silver, Barium, Beryllium, and Nickel were outside control limits in file PS1218D. All samples were rerun and reported for Silver, Barium, Beryllium, and Nickel from file PS1219A.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.
10. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
11. The TCLP extract from sample B10NV6 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-27-00

Date

gmb/ml1-194



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#: 00116194

Leaching Procedure: ☐ 1310 ☒ 1311 ☐ 1312 ☐ Other: _____

CLP Metals ☐ Digestion and ☐ Analysis Methods: ☐ ILM03.0 ☐ ILM04.0

Metals Digestion Methods: ☐ 3005A ☒ 3010A ☐ 3015 ☐ 3020A ☐ 3050B ☐ 3051 ☐ 200.7 ☐ SS17
☐ Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	6010B	200.7			99
Antimony	<input checked="" type="checkbox"/> 6010B 7041 ^s	200.7 204.2			99
Arsenic	<input checked="" type="checkbox"/> 6010B 7060A ^s	200.7 206.2	3113B		99
Barium	<input checked="" type="checkbox"/> 6010B	200.7			99
Beryllium	<input checked="" type="checkbox"/> 6010B	200.7			99
Bismuth	6010B ¹	200.7 ¹		1620	99
Boron	6010B	200.7			99
Cadmium	<input checked="" type="checkbox"/> 6010B 7131A ^s	200.7 213.2			99
Calcium	6010B	200.7			99
Chromium	<input checked="" type="checkbox"/> 6010B 7191 ^s	200.7 218.2			SS17
Cobalt	6010B	200.7			99
Copper	6010B 7211 ^s	200.7 220.2			99
Iron	6010B	200.7			99
Lead	<input checked="" type="checkbox"/> 6010B 7421 ^s	200.7 239.2	3113B		99
Lithium	6010B 7430 ⁴	200.7		1620	99
Magnesium	6010B	200.7			99
Manganese	6010B	200.7			99
Mercury	7470A ³ 7471A ³	245.1 ² 245.5 ²			99
Molybdenum	6010B	200.7			99
Nickel	<input checked="" type="checkbox"/> 6010B	200.7			99
Potassium	6010B 7610 ⁴	200.7 258.1 ⁴			99
Rare Earths	6010B ¹	200.7 ¹		1620	99
Selenium	<input checked="" type="checkbox"/> 6010B 7740 ^s	200.7 270.2	3113B		99
Silicon	6010B ¹	200.7		1620	99
Silica	6010B	200.7		1620	99
Silver	<input checked="" type="checkbox"/> 6010B 7761 ^s	200.7 272.2			99
Sodium	6010B 7770 ⁴	200.7 273.1 ⁴			99
Strontium	6010B	200.7			99
Thallium	6010B 7841 ^s	200.7 279.2 200.9			99
Tin	6010B	200.7			99
Titanium	6010B	200.7			99
Uranium	6010B ¹	200.7 ¹		1620	99
Vanadium	6010B	200.7			99
Zinc	6010B	200.7			99
Zirconium	6010B ¹	200.7 ¹		1620	99

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/26/00

CLIENT: TNUHANFORD B99-028 H1128

RECRA LOT #: 0011L194

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-003	B10NV6	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	35.9	UG/L	33.9	1.0
		Barium, TCLP Leachate	19.1	UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	2500	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0
-004	B10NV7	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	34.8	UG/L	33.9	1.0
		Barium, TCLP Leachate	14.5	UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	2080	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/26/00

CLIENT: TNUHANFORD B99-028 H1128
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L194

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	99L1822-MB1	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	3.0	u UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0
BLANK2	99L1822-MB2	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	42.4	u UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/26/00

CLIENT: TNUHANFORD B99-028 H1128

RECRA LOT #: 0011L194

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-003	B10NV6	Silver, TCLP Leachate	3750	2.5 u	5000	75.1	1.0
		Arsenic, TCLP Leachate	5080	35.9	5000	100.9	1.0
		Barium, TCLP Leachate	99100	19.1	100000	99.1	1.0
		Beryllium, TCLP Leacha	900	0.60u	1000	90.0	1.0
		Cadmium, TCLP Leachate	969	3.4 u	1000	96.9	1.0
		Chromium, TCLP Leachat	6990	2500	5000	89.9	1.0
		Nickel, TCLP Leachate	932	12.5 u	1000	93.2	1.0
		Lead, TCLP Leachate	5130	25.0 u	5000	102.7	1.0
		Antimony, TCLP Leachat	660	17.0 u	1000	66.0	1.0
		Selenium, TCLP Leachat	1010	62.3 u	1000	100.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/26/00

CLIENT: TNUHANFORD B99-028 H1128
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L194

SAMPLE	SITE ID	ANALYTE	INITIAL		DILUTION
			RESULT	REPLICATE RPD	
-----	-----	-----	-----	-----	-----
-003REP	B10NV6	Silver, TCLP Leachate	2.5 u	2.5 u NC	1.0
		Arsenic, TCLP Leachate	35.9	40.6 12.3	1.0
		Barium, TCLP Leachate	19.1	18.8 1.6	1.0
		Beryllium TCLP Leachate	0.60u	0.60u NC	1.0
		Cadmium, TCLP Leachate	3.4 u	3.4 u NC	1.0
		Chromium, TCLP Leachate	2500	2330 6.9	1.0
		Nickel, Leachate	12.5 u	12.5 u NC	1.0
		Lead, TCLP Leachate	25.0 u	25.0 u NC	1.0
		Antimony, Leachate	17.0 u	17.0 u NC	1.0
		Selenium, TCLP Leachate	62.3 u	62.3 u NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/26/00

CLIENT: TNUHANFORD B99-028 H1128
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L194

SAMPLE	SITE ID	ANALYTE	SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1822-LC1	Silver, LCS	492	500	UG/L	98.5
		Arsenic, LCS	9380	10000	UG/L	93.8
		Barium, LCS	4950	5000	UG/L	99.0
		Beryllium, LCS	245	250	UG/L	98.1
		Cadmium, LCS	238	250	UG/L	95.2
		Chromium, LCS	476	500	UG/L	95.2
		Nickel, LCS	2010	2000	UG/L	100.7
		Lead, LCS	2380	2500	UG/L	95.4
		Antimony, LCS	2850	3000	UG/L	94.9
		Selenium, LCS	9380	10000	UG/L	93.8

RECRA LabNet Use Only

0011194

Custody Transfer Record/Lab Work Request Page 1 of 1



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client Thru - Hanford B99-028

Est. Final Proj. Sampling Date _____

Project # 10985-001-001-9999-00

Project Contact/Phone # _____

RECRA Project Manager AS

QC Spec Del Std **TAT** 30 day

Date Rec'd 11-8-00 **Date Due** 12-8-00

Account # _____

Refrigerator # 1 5

#/Type Container

Liquid																			
Solid	1AG	1AG								1AG	1AG								

Volume

Liquid																			
Solid	250	250								250	250								

Preservatives

	-	-																	
--	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ANALYSES REQUESTED

ORGANIC					INORG														
VOA	BNA	Pest/PCB	Herb																

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Special Instructions: Saf B99-028

Run matrix QC

DATE/REVISIONS:

- * 1. See lab chron
- met(1) 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni
3. _____
4. _____
5. _____
6. _____

RECRA LabNet Use Only

Samples were:	COC Tape was:
1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____	1) Present on Outer Package <input checked="" type="checkbox"/> or N
Airbill # <u>See below</u>	2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N
2) Ambient or <u>Chilled</u>	3) Present on Sample <input checked="" type="checkbox"/> or N
3) Received in Good Condition <input checked="" type="checkbox"/> or N	4) Unbroken on Sample <input checked="" type="checkbox"/> or N
4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N	COC Record Present Upon Sample Rec'd <input checked="" type="checkbox"/> or N
5) Received Within Holding Time <input checked="" type="checkbox"/> or N	Conter Temp <u>4</u> C

Relinquished by	Received by	Date	Time
<u>FeckEx</u>	<u>TRoppel</u>	<u>11/8/00</u>	<u>1015</u>

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

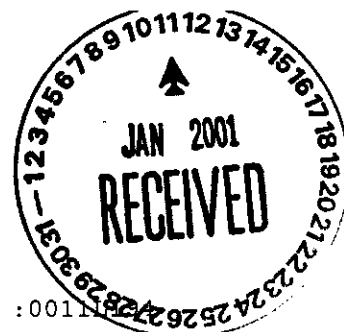
Discrepancies Between Samples Labels and COC Record? Y or N ☒

NOTES:

4235 79530340

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-028-56		Page 1 of 1								
Collector Fahlberg		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N Data Turnaround 45 Days								
Project Designation 100-HR-3 Pump & Treat - Resin Sampling		Sampling Location 100 HR-3		SAF No. B99-028		Air Quality										
Ice Chest No. GWS 14Z (10f1)		Field Logbook No. EL 1517-1		COA R10HR3C570		Method of Shipment Fed Ex										
Shipped To TMA/RECRA 11/6/00		Offsite Property No. A010004		Bill of Lading/Air Bill No. 42357953-0360												
POSSIBLE SAMPLE HAZARDS/REMARKS HISTORICAL DATA INDICATES That Samples are <u>completing</u> Special Handling and/or Storage				Preservation		None	None	None	None	Cool 4C	Cool 4C	None	None			
				Type of Container		aG	aG	aG	aG	aG	aG	G/P	aG			
				No. of Container(s)		1	1	1	1	1	1	1	1			
				Volume		60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL			
SAMPLE ANALYSIS				Isotopic Uranium		Strontium-90, Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.				
Sample No.		Matrix *		Sample Date		Sample Time										
B10NV6		OTHER SOLID		11/6/00		0850										
B10NV7		OTHER SOLID		11/6/00		0915										
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *								
Relinquished By R. Fahlberg Date/Time 11/6/00 0830				Received By R. Thoren Date/Time 11/6/00 0830				** Historical data indicates that samples are less than 2000 pCi total activity.				S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other				
Relinquished By R. Thoren Date/Time 11/7/00 0830				Received By FED EX Date/Time 11/7/00 0830				(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)								
Relinquished By FED EX Date/Time 11/8/00 1015				Received By Thorpel Date/Time 11/8/00 1015				(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)								
Relinquished By				Received By				Samples stored in Ref. # 2B at the 3728 Shipping Facility on 11/6/00. Collector not available to relinquish samples on 11/7/00 for shipment.								
Relinquished By				Received By												
Relinquished By				Received By												
LABORATORY SECTION		Received By		Title		Date/Time										
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time										

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1128



DATE RECEIVED: 11/08/00

RFW LOT # :001111

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10NV6	001	SO	00LE1457	11/06/00	11/09/00	11/27/00
B10NV6	001 R1	SO	00LE1587	11/06/00	12/05/00	12/14/00
B10NV6	001 MS	SO	00LE1457	11/06/00	11/09/00	11/27/00
B10NV6	001 MSD	SO	00LE1457	11/06/00	11/09/00	11/27/00
B10NV7	002	SO	00LE1457	11/06/00	11/09/00	11/27/00
B10NV7	002 R1	SO	00LE1587	11/06/00	12/05/00	12/14/00
B10NV7	002 MS R1	SO	00LE1587	11/06/00	12/05/00	12/14/00
B10NV7	002 MSD R1	SO	00LE1587	11/06/00	12/05/00	12/15/00

LAB QC:

SBLKGH	MB1	S	00LE1457	N/A	11/09/00	11/26/00
SBLKGH	MB1 BS	S	00LE1457	N/A	11/09/00	11/26/00
SBLKJP	MB1	S	00LE1587	N/A	12/05/00	12/13/00
SBLKJP	MB1 BS	S	00LE1587	N/A	12/05/00	12/13/00

Client: TNU-HANFORD B99-028
RFW #: 0011L194
SDG/SAF #: H1128/B99-028

W.O. #: 10985-001-001-9999-00
Date Received: 11-08-2000

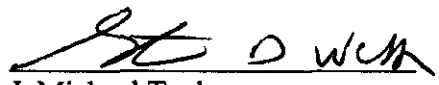
SEMIVOLATILE

Two (2) solid samples were collected on 11-06-2000.

The samples and their associated QC samples were extracted on 11-09-2000, re-extracted on 12-05-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatile target compound Bis(2-Ethylhexyl)phthalate on 11-26,27-2000 and 12-13,14,15-2000.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The samples were initially extracted and analyzed within required holding times; however, both samples were re-extracted outside holding time to confirm the level of Bis (2-Ethylhexyl) phthalate. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. The re-extracted analyses were spiked with base/neutral surrogate at 75ug instead of the specified 50ug. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
4. One (1) of thirty-six (36) surrogate recoveries was outside acceptance criteria. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
5. All base/neutral blank spike recoveries were within EPA QC limits.
6. Two (2) of twelve (12) base/neutral matrix spike recoveries was outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
The target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)
7. The method blanks contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at levels less than 3x the CRQL; however, all associated analyses yielded levels of Bis(2-Ethylhexyl)phthalate at levels less than the CRQL.
8. Internal standard area criteria were not met for samples B10NV7, B10NV7 MSD RE. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC limits; consequently, the sample was not reanalyzed.
9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

by 
J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

01-09-01
Date

son\group\data\bna\tnu-hanford-11-194.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

RECRA

Sample Discrepancy Report (SDR)

SDR #: 0005402

Initiator: John W. Smith Batch: 0D111194 (Re-extract) Parameter: BNA
Date: 12/26/00 Samples: MBI Matrix: SOLID
Client: TNO Hartford Method: SW846MCAWW/CLP1 Prep Batch: 0024587
899-028 H1128

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other _____

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

Bis (2-ethylhexyl) phthalate contamination in MBI. Samples contain "J" values

2. Known or Probable Causes(s) (To be used for trend analysis)

☐ Lack of Organization ☐ Other (Please explain):
☐ Lack of Training
☐ Lack of Discipline
☐ Lack of Resources
☐ Lack of Time
☐ Lack of Management Support

3. Discussion and Proposed Action

Other Description:

☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

Min. impact on data.
Report + Narrate

4. Project Manager Instructions...signature/date:

☒ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
Date/Person _____
☐ Add
☐ Cancel

Frederick Johnson 12/26/00

5. Final Action...signature/date:

Other Explanation:

☒ Verified re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR

☐ Initiator
☐ Lab Manager: M. Taylor
☒ Project Mgr: Stone/Carey/Johnson
☐ Section Mgr: Wesson/Daniels
☒ QA (file): Schrenkel
☐ Data Management: Feldman
☐ Sample Prep: Bickel/Kauffman

Route Distribution of Completed SDR

☐ Metals: Doughty
☐ Inorganic: Perrone
☒ GC/LC: Pastor
☒ MS: Layman/Rycklak
☐ Log-In: Keppel
☐ Admin: Soos
☐ Other: _____

RECRA

Sample Discrepancy Report (SDR)

SDR #: 00M352

Initiator: John W. Smith Batch: 0011 L194 Parameter: BNA 0025X
 Date: 11/29/00 Samples: MS/MSD + BS Matrix: Soil
 Client: TWO Harbors 699-028 Method: SW846/MCAWW/CLPI Prep Batch: 00L21457
H1128

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other _____

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

1) Four Acid spikes for low in MS/MSD. 2) PCP fails low in MBI. 3) Bis(2-ethylhexyl)
 phthalate exceeds calibration range in MS. Only a "0" value in MS1

2. Known or Probable Causes(s) (To be used for trend analysis)

☐ Lack of Organization ☐ Other (Please explain):
☐ Lack of Training
☐ Lack of Discipline
☐ Lack of Resources
☐ Lack of Time
☐ Lack of Management Support

3. Discussion and Proposed Action

Other Description:

☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☒ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date:

☒ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
 Date/Person _____
☐ Add
☐ Cancel

5. Final Action...signature/date:

Other Explanation:

☒ Verified (re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative CIT 1/8/01
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR

☐ Initiator
☐ Lab Manager: M. Taylor
☐ Project Mgr: Stone/Carey/Johnson
☐ Section Mgr: Wesson/Daniels
☒ QA (file): Schrenkel
☐ Data Management: Feldman
☐ Sample Prep: Bickel/Kauffman

Route Distribution of Completed SDR

☐ Metals: Doughty
☐ Inorganic: Perrone
☐ GC/LC: Pastor
☐ MS: Layman/Rycklak
☐ Log-In: Keppel
☐ Admin: Soos
☐ Other: _____

Relay
12/3/00
4

Initiator: Bernard Foley Batch: 0011194 Parameter: BUA
 Date: 12/6/00 Samples: 1,2 Matrix: 3
 Client: TNJ Method: SW846/MCAWW/CLP/ Prep Batch: 0045589

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other _____

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle) signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Surrogate concentrations switched

2. Known or Probable Causes(s)

analyst error

3. Discussion and Proposed Action

☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

Other Description: Re-leaching results of both ordered standards, use ESD results - w/ modified analyte list corrected for the component concentrations as prepared

4. Project Manager Instructions...signature/date: _____

☐ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
☐ Date/Person _____
☐ Add
☐ Cancel

5. Final Action...signature/date: _____

☐ Verified re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR
☒ Initiator
☒ Lab General Manager: M. Taylor
☒ Project Mgr: Stone/Johnson
☒ Technical Mgr: Wesson/Daniels
☒ QA (file): Popp
☐ Data Management: Feldman
☐ Sample Prep: Doughty/Kiger

Route Distribution of Completed SDR
☐ Metals: Doughty
☐ Inorganic: Perrone
☐ GC/LC: Pastor
☒ MS: Ryckla/Layman
☐ Log-in: Keppel
☐ Admin: Soos
☐ Other: _____

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



2

Report Date: 01/08/01 14:10

Page: 1a

	Cust ID:	B10NV6	B10NV6	B10NV6	B10NV6	B10NV7	B10NV7
Sample Information	RFW#:	001	001	001 MS	001 MSD	002	002
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
			REPREP				REPREP
Surrogate Recovery	Nitrobenzene-d5	36 %	47 %	98 %	96 %	101 %	83 %
	2-Fluorobiphenyl	34 %	46 %	104 %	90 %	94 %	73 %
	p-Terphenyl-d14	54 %	87 %	155 * %	119 %	128 %	110 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
	bis(2-Ethylhexyl)phthalate	1200 B	56 JB	7200 E	3900 B	810 B	86 JB

	Cust ID:	B10NV7	B10NV7	SBLKGH	SBLKGH BS	SBLKJP	SBLKJP BS
Sample	RFW#:	002 MS	002 MSD	00LE1457-MB1	00LE1457-MB1	00LE1587-MB1	00LE1587-MB1
Information	Matrix:	SOLID	SOLID	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
		REPREP	REPREP				
	Nitrobenzene-d5	63 %	53 %	104 %	84 %	57 %	43 %
Surrogate	2-Fluorobiphenyl	59 %	49 %	77 %	64 %	63 %	43 %
Recovery	p-Terphenyl-d14	97 %	69 %	100 %	77 %	99 %	66 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
bis(2-Ethylhexyl)phthalate		140 JB	320 JB	93 J	75 JB	820	160 JB

*= Outside of EPA CLP OC limits.

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra LabNetContract: 0985-01-01Case No.: TNUHANFORD B99-028 H1128RFW Lot No.: 0011L194-001MATRIX Spike - Sample No.: B10NV6

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC.
Phenol	5610	287	6430	109 *	26 - 90
2-Chlorophenol	5610	0	5250	94	25 -102
1,4-Dichlorobenzene	3740	0	2890	77	28 -104
N-Nitroso-di-n-prop. (1)	3740	0	4300	115	41 -126
1,2,4-Trichlorobenzene	3740	0	3240	87	38 -107
4-Chloro-3-methylphenol	5610	0	5480	98	26 -103
Acenaphthene	3740	0	4260	114	31 -137
4-Nitrophenol	5610	0	0	0 *	11 -114
2,4-Dinitrotoluene	3740	0	4030	108 *	28 - 89
Pentachlorophenol	5610	0	0	0 *	17 -109
Pyrene	3740	0	5240	140	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD REC
Phenol	5610	5720	97 *	11	35 26 - 90
2-Chlorophenol	5610	4280	76	21	50 25 -102
1,4-Dichlorobenzene	3740	2350	63	20	27 28 -104
N-Nitroso-di-n-prop. (1)	3740	3760	100	14	38 41 -126
1,2,4-Trichlorobenzene	3740	2820	75	14	23 38 -107
4-Chloro-3-methylphenol	5610	4870	87	11	33 26 -103
Acenaphthene	3740	3320	89	24 *	19 31 -137
4-Nitrophenol	5610	0	0 *	0	50 11 -114
2,4-Dinitrotoluene	3740	3350	89	19	47 28 - 89
Pentachlorophenol	5610	0	0 *	0	47 17 -109
Pyrene	3740	3610	97	36	36 35 -142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 11 outside limitsSpike Recovery: 7 out of 22 outside limitsCOMMENTS: 1 out of 12 base/neutral compounds

at 11/8/01

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNetContract: 0985-01-01Case No.: TNUHANFORD B99-028 H1128RFW Lot No.: 0011L194-002MATRIX Spike - Sample No.: B10NV7RELevel: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	3740	0	1500	40	28 -104
N-Nitroso-Di-n-propylamine	3740	0	2400	64	41 -126
1,2,4-Trichlorobenzene	3740	0	1780	48	38 -107
Acenaphthene	3740	0	2370	63	31 -137
2,4-Dinitrotoluene	3740	0	2570	69	28 -89
Pyrene	3740	0	2840	76	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD REC
1,4-Dichlorobenzene	10600	3410	32	22	27 28 -104
N-Nitroso-Di-n-propylamine	10600	6140	58	9	38 41 -126
1,2,4-Trichlorobenzene	10600	3960	37 *	26 *	23 38 -107
Acenaphthene	10600	5240	50	23 *	19 31 -137
2,4-Dinitrotoluene	10600	5590	53	26	47 28 -89
Pyrene	10600	5810	55	32	36 35 -142

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 6 outside limitsSpike Recovery: 1 out of 12 outside limits

COMMENTS:

3D
SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Case No.: TNUHANFORD B99-028 H1128

RFW Lot No.: 0011L194

BLANK Spike - Sample No.: SBLKGHLE1457-MB1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	BS CONCENTRATION UG/KG	BS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	1670	0	997	60	28 -104
N-Nitroso-Di-n-propylamine	1670	0	1450	87	41 -126
1,2,4-Trichlorobenzene	1670	0	982	59	38 -107
Acenaphthene	1670	0	1050	63	31 -137
2,4-Dinitrotoluene	1670	0	1400	84	28 -89
Pyrene	1670	0	1210	73	35 -142

Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

11

3D
SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Case No.: TNUHANFORD B99-028 H1128

RFW Lot No.: 0011L194

BLANK Spike - Sample No.: SBLKJPLE1587-MB1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	BS CONCENTRATION UG/KG	BS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	1670	0	660	40	28 -104
N-Nitroso-Di-n-propylamine	1670	0	795	48	41 -126
1,2,4-Trichlorobenzene	1670	0	683	41	38 -107
Acenaphthene	1670	0	777	47	31 -137
2,4-Dinitrotoluene	1670	0	803	48	28 -89
Pyrene	1670	0	980	59	35 -142

Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

RECRA LabNet Use Only
0011194

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client TNU-Hanford B99-028

Est. Final Proj. Sampling Date _____

Project # 10985-001-001-9999-06

Project Contact/Phone # _____

RECRA Project Manager AS

QC Spec Del Std TAT 30 day

Date Rec'd 11-8-00 Date Due 12-8-00

Account # _____

Matrix QC Codes:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	ORGANIC					INORG		RECRA LabNet Use Only				
			MS	MSD				VOA	BNA	Pest/PCB	Herb	Metal	CN	ITCLP	met	ICR03			
S - Soil	001	Bionvle			So	11/6/00	0850	✓	✓					✓					
SE - Sediment	002	1 7			1	1	0915	✓	✓					✓					
SO - Solid	003	Bionvle top of pool			L	*	-												
SL - Sludge	004	1 7 1 002			1	1	-							✓					
W - Water																			
O - Oil																			
A - Air																			
DS - Drum Solids																			
DL - Drum Liquids																			
L - EP/TCLP Leachate																			
WI - Wipe																			
X - Other																			
F - Fish																			

Special Instructions: Saf B99-028

Run Matrix QC

DATE/REVISIONS:

* See labchron
met 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

Relinquished by	Received by	Date	Time
FedEx	TRoppel	11-8-00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

4235 79530360

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or Hand Delivered _____

Airbill # See below

2) Ambient or Chilled

3) Received in Good Condition ☒ or N

4) Labels Indicate Properly Preserved ☒ or N

5) Received Within Holding Times ☒ or N

COC Tape was:

1) Present on Outer Package ☒ or N

2) Unbroken on Outer Package ☒ or N

3) Present on Sample ☒ or N

4) Unbroken on Sample ☒ or N

COC Record Present Upon Sample Rec'd ☒ or N

Cooler Temp 4 C

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-028-56		Page 1 of 1				
Collector Fahlberg	Company Contact T Pickett	Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N		Data Turnaround 45 Days				
Project Designation 100-HR-3 Pump & Treat - Resin Sampling		Sampling Location 100 HR-3		SAF No. B99-028		Air Quality						
Ice Chest No. GWS 142 (10fi)		Field Logbook No. EL 1517-1		COA R10HR3C570		Method of Shipment Fed Ex		14				
Shipped To FMA/RECRA 11/6/00		Offsite Property No. A010004		Bill of Lading/Air Bill No. 42357953-0360								
POSSIBLE SAMPLE HAZARDS/REMARKS Historical DATA indicates That samples are <2000 pCi/g Special Handling and/or Storage				Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None
				Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG
				No. of Container(s)	1	1	1	1	1	1	1	1
				Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	
SAMPLE ANALYSIS				Isotopic Uranium	Strontium-90	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions	
Sample No.	Matrix *	Sample Date	Sample Time									
B10NV6	OTHER SOLID	11/6/00	0850					X	X	X	X	
B10NV7	OTHER SOLID	11/6/00	0915					X	X	X	X	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS								
Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 11/6/00 1315 Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 11/6/00 0830 Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 11/6/00 0830 Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 11/6/00 1015 Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 11/6/00 1015 Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 11/6/00 1015				** Historical data indicates that samples are less than 2000 pCi total activity. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) [Trichloromono-fluoromethane] (2) Metals by ICP (TCLP) - 1311/6010 [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Metals by ICP (TCLP) Add-on - 1311/6010 [Antimony, Beryllium, Nickel] Samples stored in Ref. # 2B at the 3728 Shipping Facility on 11/6/00 Collector not available to relinquish samples on 11/7/00 for shipment.								
LABORATORY SECTION				Matrix * S=Soil SE=Soil/Element SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WJ=Wipe L=Liquid V=Vegetation X=Other								
FINAL SAMPLE DISPOSITION				Disposal Method								



Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1128

DATE RECEIVED: 11/08/00

RFW LOT # :0011L194

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10NV6	001	SO	00LVH486	11/06/00	N/A	11/11/00
B10NV6	001	R1	SO 00LVH487	11/06/00	N/A	11/13/00
B10NV7	002	SO	00LVH486	11/06/00	N/A	11/11/00
B10NV7	002 MS	SO	00LVH486	11/06/00	N/A	11/11/00
B10NV7	002 MSD	SO	00LVH486	11/06/00	N/A	11/11/00

LAB QC:

VLKBW	MB1	S	00LVH486	N/A	N/A	11/11/00
VLKBW	MB1 BS	S	00LVH486	N/A	N/A	11/11/00
VLKBX	MB1	S	00LVH487	N/A	N/A	11/13/00
VLKBX	MB1 BS	S	00LVH487	N/A	N/A	11/13/00

**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD B99-028
RFW #: 0011L194
SDG/SAF #: H1128/B99-028

W.O. #: 10985-001-001-9999-00
Date Received: 11-08-2000

GC/MS VOLATILE

Two (2) solid samples were collected on 11-06-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 11-11,13-2000.


The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The samples were analyzed within required holding time.
3. Five (5) of twenty-seven (27) surrogate recoveries were outside EPA QC limits. The analysis of associated matrix spike fulfills the reanalysis requirement of sample B10NV7. Sample B10NV6 was reanalyzed on 11-13-2000 and reported.
4. One (1) of ten (10) matrix spike recoveries was outside EPA QC limits.

All blank spike recoveries were within EPA QC limits.

The target compounds are not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

5. The method blanks contained the common laboratory contaminant Methylene Chloride at levels less than 4x the CRQL.
6. Internal standard area criteria were not met for samples B10NV6 and B10NV7. The analysis of associated matrix spike fulfills the reanalysis requirement of sample B10NV7. Sample B10NV6 was reanalyzed on 11-13-2000 and reported.
7. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

01-03-01
Date

som\group\data\voa\tnu-hanford-11-194.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 12/20/00 16:02

RFW Batch Number: 0011L194

Client: TNUHANFORD B99-028 H1128 Work Order: 10985001001 Page: 1a

	Cust ID:	B10NV6	B10NV6	B10NV7	B10NV7	B10NV7	VBLKBW
Sample	RFW#:	001	001	002	002 MS	002 MSD	00LVH486-MB1
Information	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOIL
	D.F.:	0.980	1.02	1.02	1.04	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
			REPREP				
	1,2-Dichloroethane-d4	95 %	98 %	98 %	99 %	95 %	89 %
Surrogate	Toluene-d8	150 * %	143 * %	145 * %	144 * %	141 * %	94 %
Recovery	Bromofluorobenzene	71 %	71 %	73 %	68 %	69 %	89 %
	=====fl=====						
Trichlorofluoromethane		3 J	2 J	2 J	2 J	3 J	5 U
Methylene Chloride		37 B	43 B	37 B	44 B	51 B	16
Chloroform		11	9 J	11	10	11	5 U

	Cust ID:	VBLKBW BS	VBLKBX	VBLKBX BS
Sample	RFW#:	00LVH486-MB1	00LVH487-MB1	00LVH487-MB1
Information	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG
	1,2-Dichloroethane-d4	96 %	92 %	90 %
Surrogate	Toluene-d8	100 %	104 %	100 %
Recovery	Bromofluorobenzene	94 %	92 %	85 %
	=====fl=====			
Trichlorofluoromethane		5 U	5 U	5 U
Methylene Chloride		8 B	6	4 JB
Chloroform		5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 11L194

Matrix Spike - EPA Sample No.: B10NV7 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	117.89	0.0000	123.05	104	59-172
Trichloroethene	117.89	0.0000	116.24	99	62-137
Benzene	117.89	0.0000	117.54	100	66-142
Toluene	117.89	0.0000	169.61	144*	59-139
Chlorobenzene	117.89	0.0000	117.32	100	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	113.17	120.92	107	3	22	59-172
Trichloroethene	113.17	111.27	98	1	24	62-137
Benzene	113.17	111.17	98	2	21	66-142
Toluene	113.17	154.77	137	5	21	59-139
Chlorobenzene	113.17	109.32	96	4	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 1 out of 10 outside limits

COMMENTS:

3B
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 11L194

Matrix Spike - EPA Sample No.: VBLKBW Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50.000	0.0000	51.406	103	59-172
Trichloroethene	50.000	0.0000	47.126	94	62-137
Benzene	50.000	0.0000	46.302	93	66-142
Toluene	50.000	0.0000	50.047	100	59-139
Chlorobenzene	50.000	0.0000	50.462	101	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS: _____

3B
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 11L194

Matrix Spike - EPA Sample No.: VBLKBX Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50.000	0.0000	45.703	91	59-172
Trichloroethene	50.000	0.0000	43.664	87	62-137
Benzene	50.000	0.0000	46.671	93	66-142
Toluene	50.000	0.0000	48.484	97	59-139
Chlorobenzene	50.000	0.0000	48.407	97	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

RECRA LabNet Use Only

0011194

Custody Transfer Record/Lab Work Request

Page 1 of 1



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU - Hanford B99-028

Est. Final Proj. Sampling Date _____

Project # 10985-001-001-9999-06

Project Contact/Phone # _____

RECRA Project Manager AS

QC Spec Del Std **TAT** 30 day

Date Rec'd 11-8-00 **Date Due** 12-8-00

Account # _____

Refrigerator # 1 5

#/Type Container

Liquid																			
Solid	1A6	1A6						1A6	1A6										

Volume

Liquid								500	1000										
Solid	250	250						250	250										

Preservatives

	-	-						-	-										
--	---	---	--	--	--	--	--	---	---	--	--	--	--	--	--	--	--	--	--

ANALYSES REQUESTED

ORGANIC					INORG	
VOA	BNA	Pest/PCB	Herb		Metal	CN

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only											
			MS	MSD				CL24X	CL25X										
	001	Bionvle			SO	11/8/00	0850	✓	✓					✓				✓	
	002	1 7			1	1	0915	✓	✓					✓				✓	
	003	Bionvle tcp of 001			L	*	-							✓					
	004	1 7 1 002			1	1	-							✓					

Special Instructions: Saf B99-028

Run matrix QC

DATE/REVISIONS:

* 1. See lab chron

met 1 2. As. Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

3. _____

4. _____

5. _____

6. _____

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or Hand Delivered _____

Airbill # See below

2) Ambient or Chilled

3) Received in Good Condition ☒ or N

4) Labels Indicate Properly Preserved ☒ or N

5) Received Within Holding Times ☒ or N

COC Tape was:

1) Present on Outer Package ☒ or N

2) Unbroken on Outer Package ☒ or N

3) Present on Sample ☒ or N

4) Unbroken on Sample ☒ or N

COC Record Present Upon Sample Rec't ☒ or N

Cooler Temp 4 C

Discrepancies Between Samples Labels and COC Record? Y or N ☒

NOTES:

4235 79530360

Relinquished by	Received by	Date	Time
FeEx	TRoppel	11/8/00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

WILLIT

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-028-56		Page 1 of 1		
Collector Fahlberg		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N		Data Turnaround 45 Days		
Project Designation 100-HR-3 Pump & Treat - Resin Sampling		Sampling Location 100 HR-3		SAF No. B99-028		Air Quality						
Ice Chest No. GWS 142 (10fi)		Field Logbook No. EL 1517-1		COA R10HR3C570		Method of Shipment Fed Ex						
Shipped To FMA/RECRA RF 11/6/00		Offsite Property No. A010004		Bill of Lading/Air Bill No. 42357953-0360								
POSSIBLE SAMPLE HAZARDS/REMARKS Historical DATA indicates That Samples are less than 2000 pCi				Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None
				Type of Container	aG	aG	aG	aG	aG	aG	G/P	aG
				No. of Container(s)	1	1	1	1	1	1	1	1
				Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL
Special Handling and/or Storage												
SAMPLE ANALYSIS				Isotopic Uranium	Strontium 89.90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2- ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.	
Sample No.	Matrix *	Sample Date	Sample Time									
B10NV6	OTHER SOLID	11/6/00	0850					X	X	X	X	
B10NV7	OTHER SOLID	11/6/00	0915					X	X	X	X	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS								
Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00				** Historical data indicates that samples are less than 2000 pCi total activity. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel) Samples stored in Ref. # 2B at the 3728 Shipping Facility on 11/6/00 Collector not available to relinquish samples on 11/7/00 for shipment.								
Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00 Relinquished By R. Fahlberg / R. Fahlberg 11/6/00				Matrix * S= Soil SE= Sediment SO= Solid S= Sludge W= Water O= Oil A= Air DS= Dross Solids DL= Dross Liquids T= Tissue WI= Wipe L= Liquid V= Vegetation X= Other								
LABORATORY SECTION				Received By								
FINAL SAMPLE DISPOSITION				Disposal Method								
				Disposed By								
				Date/Time								